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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/623,307    03/21/01    OKU    N    50026/024001

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HM22/0829

EXAMINER

EPFS, J

ART UNIT

PAPER NUMBER

1635

DATE MAILED:

08/29/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**

Application No.

09/623,307

Applicant(s)

OKU ET AL.

Examiner

Janet L. Epps

Art Unit

1635

-- *Th MAILING DATE of this communication app ars on th cov r sh et with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The preliminary amendment received 8-28-2000 does not comply with 37 CFR 1.121. Bracketing or underlining are commonly used to indicate amendments or changes in the claims as provided in 37 CFR 1.121(a)(2)(ii) and are normally not intended to be printed in the published patent. In the preliminary amendment filed 8-28-2000, applicant has used underlining in such a manner that it is unclear to the examiner whether the underlining in claims 29, 36, 47 and 49-50 is intended to appear in the patent. The underlining is unclear because the instant claims are new claims. If underlining and/or bracketing are intended to appear in the claims in the published patent, such intention must be clearly indicated in applicant's reply to this notice.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in JAPAN on 2-27-1998. However, should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a translation of the foreign application should be submitted under 37 CFR 1.55 in reply to this action.

### ***Claim Objections***

3. Claim 26 is objected to because of the following informalities: Claim 26 recites the term "polyealkylenimine," this term is spelled incorrectly. The correct term is likely "polyalkylenimine." Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 28, 30-42 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation “polyalkylenimine” in claim 26. There is insufficient antecedent basis for this limitation in the claim.

Claims 30-32 recite “[t]he compositions of claim 29.” There is insufficient antecedent basis for this limitation in the claim since claim 29 refers only to “the composition” and not to multiple “compositions.”

Claims 36-42 recite the limitation “the base skeleton” in claim 26. There is insufficient antecedent basis for this limitation in the claim.

Claims 31-35, 38-39 and 41-42 recite wherein “any two or more of side chains  $R'$ ,  $R^1$ ,  $R^m$ , or  $R^{m+1}$  comprise a group selected from the group consisting of,” these limitations are vague and indefinite since independent claim 26 (from which these claims ultimately depend from) do not recite these limitations. There is insufficient antecedent basis for these limitations in claim 26.

Claim 46 recites the limitation “phosphotidylcholine” in claim 45. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Khmelnitsky et al.

Claim 26 recites “[a] composition comprising a polyalkylenimine having two or more hydrophobic groups or its salt.” This claim is interpreted as reading on polyalkylenimine compositions since the term “polyalkylenimine” is not spelled properly.

Khmelnitsky et al. disclose a composition comprising a polyethyleneimine modified by cetyl ( $C_{16}H_{33}$ ) bromide and ( $C_2H_5$ )ethyl bromide. The cetyl ( $C_{16}H_{33}$ ) bromide and ( $C_2H_5$ )ethyl bromide groups are both halogenated saturated alkyl groups which are known in the art to be hydrophobic. Therefore, Khmelnitsky et al. discloses a polyalkylenimine composition comprising two hydrophobic groups.

Khmelnitsky et al. teach each and every aspect of the instant invention thereby anticipating Applicant's claimed invention.

8. Claims 26-29, 33, 36, 40 and 43-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Byk et al. (WO 97/18185: WO; Issued as US Patent No. 6,171,612 B1: US). Since the WO 97/18185 reference is in French, the instant rejection will be based upon the English translation of the Abstract, the Figures, and the text of the issued US Patent 6,171,612, although the US Patent does not qualify as prior art.

Art Unit: 1635

Byk et al. disclose pharmaceutical compositions for the transfection of nucleic acids (abstract). The compositions of Byk et al. comprise a polyamine structure having at least two hydrophobic regions. For example, RPR120535 (page 9 of WO) is a linear polyamine comprising two linear hydrocarbon chains extending from a terminal N atom. Additionally, the compounds, RPR127888A, RPR122759, and RPR122760A (page 10) are branched polyamines each comprising a branched spermine ( $\text{NH}_2\text{-(CH}_2\text{)}_3\text{-NH-(CH}_2\text{)}_4\text{-NH-(CH}_2\text{)}_3\text{-NH}$ ) attached in a branched manner to a polyamine structure and further comprising wherein two hydrocarbon chains are attached to the terminal N group of said polyamine structure.

In another embodiment, Byk et al. discloses compositions comprising a nucleic acid, a lipopolyamine as claimed and an adjuvant capable of associating with the lipopolyamine/nucleic acid complex and of improving the transfecting power thereof. Byk et al. teaches that the transfecting power of lipopolyamines may, unexpectedly, be increased in the presence of certain adjuvants (lipids, peptides or proteins for example), capable of associating with the lipopolyamine/nucleic acid complex. Specifically, Byk et al. teach that the compositions may comprise one or more neutral lipids as adjuvants, wherein said neutral lipid is, for example, dioleoylphosphatidylethanolamine (DOPE) (see page 19 of WO and col. 26, lines 3-25 of US).

Byk et al. teach each and every aspect of the instant invention thereby anticipating Applicant's claimed invention.

Art Unit: 1635

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

10. Claims 26-29, 33 and 43-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolff et al. (US Patent No. 5,744,335)

Wolff et al. disclose compositions for use in the transfection of nucleic acid into cells.

The compositions of Wolff et al. comprise a ternary complex of DNA, amphipathic compounds, and a DNA-binding protein, for use in the enhancement of gene transfer into cells. The amphipathic compounds of Wolff et al. include compounds that are cationic. The cationic amphipathic compound can be a non-natural polyamine wherein one or more of the amines is bound to at least one hydrophobic moiety wherein the hydrophobic moiety comprises a C6-C24 alkane, C6-C24 alkene, sterol, steroid, lipid, fatty acid or hydrophobic hormone. The amphipathic compounds may or may not form liposomes (col. 2, 40-53). The polyalkylenimine compounds of Wolff et al. that comprise at least one hydrophobic region include those recited at the end of col. 2 through the top of col. 5 of the specification of this US Patent. In one specific embodiment, the third compound of col. 3 of this US Patent comprises a tetraethylenepentamine backbone with two hydrophobic hydrocarbon chains extending from each end. This compound is a species of the genus of compounds represented by formula (I) as recited in claim 28 of the instant application.

Art Unit: 1635

In one preferred embodiment the amphipathic compounds (described above) constitute a liposome which are vesicles that contain one or more bilayers with an internal aqueous compartment. In one preferred embodiment the liposome is non-cationic which means that its net charge is neutral or negatively charged. It can be prepared using dioleoylphosphatidyl ethanolamine (DOPE) alone or combined with other lipids such as dioleoylphosphatidyl serine (DOPS) or oleic acid (col. 9, lines 29-52).

Wolff et al. teach each and every aspect of the instant invention thereby anticipating Applicant's claimed invention.

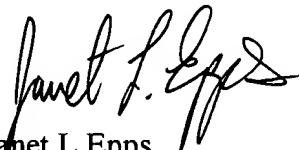


Art Unit: 1635

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet L Epps whose telephone number is 703-308-8883. The examiner can normally be reached on Mondays through Friday, 9:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John L. LeGuyader can be reached on (703)-308-0447. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-746-5143 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

  
Janet L Epps  
Examiner  
Art Unit 1635

jle  
August 23, 2001